

# Notulae to the Italian flora of algae, bryophytes, fungi and lichens: 16

Sonia Ravera<sup>1,2</sup>, Alfredo Vizzini<sup>3</sup>, Cecilia Totti<sup>4</sup>, Marta Puglisi<sup>5</sup>,  
Mattia Martin Azzella<sup>6</sup>, Andrea Battaglini<sup>7</sup>, Liliana Bernardo<sup>8,9</sup>, Ilaria Bonini<sup>10</sup>,  
Giacomo Calvia<sup>11</sup>, Laura Cancellieri<sup>12</sup>, Marco Cantonati<sup>13</sup>,  
Antonio B. De Giuseppe<sup>8</sup>, Zuzana Fačková<sup>14</sup>, Goffredo Filibeck<sup>12</sup>,  
Gabriele Galasso<sup>15</sup>, Roberta Galli<sup>16</sup>, Gabriele Gheza<sup>17</sup>, Anna Guttová<sup>14</sup>,  
Josef Hafellner<sup>18</sup>, Deborah Isocrono<sup>19</sup>, Jiří Malíček<sup>20</sup>, Juri Nascimbene<sup>17</sup>,  
Pier Luigi Nimis<sup>21</sup>, Silvia Ongaro<sup>19</sup>, Giulio Pandeli<sup>10</sup>, Luca Paoli<sup>22</sup>,  
Nicodemo G. Passalacqua<sup>8,9</sup>, Giovanna Potenza<sup>23</sup>, Filippo Prosser<sup>24</sup>,  
Domenico Puntillo<sup>8</sup>, Leonardo Rosati<sup>23</sup>, Sabrina Rossi<sup>25</sup>, Gianluca Rapaccini<sup>26</sup>,  
Giovanni Sicoli<sup>9</sup>, Daniel Spitale<sup>27</sup>, Egidio Trainito<sup>28</sup>

**1** Dipartimento di Scienze e Tecnologie Biologiche Chimiche e Farmaceutiche (STEBICEF), Università di Palermo, Via Archirafi 38, 90123 Palermo, Italy **2** NBFC, National Biodiversity Future Center, Palermo 90133, Italy **3** Institute for Sustainable Plant Protection (IPSP) – CNR, Viale P.A. Mattioli 25, 10125 Torino, Italy **4** Dipartimento di Scienze della Vita e dell'Ambiente, Università Politecnica delle Marche, via Brecce Bianche, 60131 Ancona, Italy **5** Dipartimento di Scienze Biologiche, Geologiche e Ambientali, Sezione di Biologia vegetale, Università di Catania, Via A. Longo 19, 95125 Catania, Italy **6** Dipartimento di Pianificazione, design, tecnologia dell'architettura, Sapienza Università di Roma, Via Flaminia 72, 00196 Roma, Italy **7** via del Bandino 40, 50126 Firenze, Italy **8** Museo di Storia Naturale della Calabria ed Orto Botanico, Università della Calabria, 87036 Arcavacata di Rende (Cosenza), Italy **9** Dipartimento di Biologia, Ecologia e Scienze della Terra, Università della Calabria, 87036, Arcavacata di Rende (Cosenza), Italy **10** Dipartimento di Scienze della Vita, Università di Siena, Via P. A. Mattioli 4, 53100 Siena, Italy **11** Faculty of Agricultural, Environmental and Food Sciences, Free University of Bozen-Bolzano, Piazza Università 5, 39100 Bozen-Bolzano, Italy **12** Dipartimento di Scienze Agrarie e Forestali, Università della Tuscia, Via S. C. de' Lellis snc, 01100 Viterbo, Ital **13** Department of Biological, Geological and Environmental Sciences—BiGeA, University of Bologna, Via Selmi 3, 40126 Bologna, Italy **14** Plant Science and Biodiversity Centre, Slovak Academy of Sciences, Dúbravská cesta 9, SK-84523 Bratislava, Slovakia **15** Sezione di Botanica, Museo di Storia Naturale di Milano, Corso Venezia 55, 20121 Milano, Ital **16** via Bazzanese 36, 06049 Spoleto (Perugia), Italy **17** BIOME Lab, Dipartimento di Scienze Biologiche, Geologiche e Ambientali, Alma Mater Studiorum, Università di Bologna, Via Irnerio 42, 40126 Bologna, Italy **18** Institute of Biology, Division of Plant Sciences, University of Graz, NAWI Graz, Holteigasse 6, 8010 Graz, Austria **19** Dipartimento di Scienze Agrarie, Forestali e Alimentari, Università di Torino, Largo Paolo Braccini 2, 10095 Grugliasco (Torino), Italy **20** Institute of Botany, The Czech Academy of Sciences, Zámek 1, CZ-252 43 Průhonice, Czech Republic **21** Dipartimento di Scienze della Vita, Università di Trieste, Via L. Giorgieri 10, 34127 Trieste, Italy **22** Dipartimento di Biologia, Università di Pisa, Via Luca Ghini 13, 56126 Pisa, Italy **23** Scuola di Scienze Agrarie, Forestali, Alimentari e Ambientali, Università della Basilicata, Via dell'Ateneo Lucano 10, 85100



Potenza, Italy **24** Fondazione Museo Civico di Rovereto, Largo S. Caterina 41, 38068 Rovereto (Trento), Italy **25** Osservatorio naturalistico Isola di Culuccia, 07028 Santa Teresa Gallura (Sassari), Italy **26** Terrapreta APS, Via Mussi 22, 20154 Milano, Italy **27** Biomonitoring Team, via Stenico 2, 38095 Tre Ville (Trento), Italy **28** Genoa Marine Centre, Stazione Zoologica Anton Dohrn, Istituto Nazionale di Biologia, Ecologia e Biotecnologie Marine, Villa del Principe, Piazza del Principe 4, 16126 Genoa, Italy

Corresponding author: Sonia Ravera (sonia.ravera@unipa.it)

---

Academic editor: Lorenzo Peruzzi | Received 11 October 2023 | Accepted 9 November 2023 | Published 24 November 2023

---

**Citation:** Ravera S, Vizzini A, Totti C, Puglisi M, Azzella MM, Battaglini A, Bernardo L, Bonini I, Calvia G, Cancellieri L, Cantonati M, De Giuseppe AB, Fačková Z, Filibeck G, Galasso G, Galli R, Gheza G, Guttová A, Hafellner J, Isocrono D, Malíček J, Nascimbene J, Nimis PL, Ongaro S, Pandeli G, Paoli L, Passalacqua NG, Potenza G, Prosser F, Puntillo D, Rosati L, Rossi S, Rapaccini G, Sicoli G, Spitale D, Trainito E (2023) Notulae to the Italian flora of algae, bryophytes, fungi and lichens: 16. Italian Botanist 16: 105–120. <https://doi.org/10.3897/italianbotanist.16.114044>

---

## Abstract

In this contribution, new data concerning algae, bryophytes, fungi and lichens of the Italian flora are presented. It includes new records and confirmations for the algal genera *Acetabularia*, *Nitella*, and *Nitelopsis* for the bryophyte genera *Drepanocladus*, *Fissidens*, *Hookeria*, and *Weissia*, the fungal genera *Alnicola*, *Arthonia*, *Cortinarius*, *Inocybe*, *Leucoagaricus*, *Neohygrocybe*, and *Puccinia* and the lichen genera *Bacidina*, *Chaenotheca*, *Flavoplaca*, *Gyalecta*, *Heterodermia*, *Rinodina*, *Scytinium*, and *Squamarina*.

## Keywords

Ascomycota, Basidiomycota, Bryidae, Charophyceae, Ulvophyceae

## How to contribute

The text of the records should be submitted electronically to: Cecilia Totti (c.totti@univpm.it) for algae, Marta Puglisi (mpuglisi@unict.it) for bryophytes, Alfredo Vizzini (alfredo.vizzini@unito.it) for fungi, Sonia Ravera (sonia.ravera@unipa.it) for lichens. Each text should be within 1,000 characters (spaces included).

## Floristic records

### Algae

#### *Acetabularia caliculus* J.V.Lamoroux (Polyphysaceae)

+ **ITA (SAR):** Porto Pozzo, Palau (Sassari) (UTM WGS84: 32T 523455.4560060), shoals with fine sediments, -3 m, 30 August 2023, leg. S. Rossi, det. E. Trainito, G. Calvia (FI). – Species confirmed for Italy (Sardegna).



This species was found growing densely in a rather small (not more than 30 m<sup>2</sup>) shoal, close to the entrance of a small gulf and a lagoon, on very fine sediments. It is characterised by the presence of a stalk (white or green) with a terminal concave cup (brilliant green) formed by free segments. *Acetabularia caliculus* is distinguished from *A. acetabulum* L. primarily by having a generally longer axis, a darker green color of the terminal disc with a significantly lower number of rays (55–90 in *A. acetabulum*, 22–35 in *A. caliculus*), and the upper crown formed by segments that are not fused together (Rodríguez-Prieto et al. 2010). First described from Western Australia, in the Mediterranean Sea it has been previously recorded only from the Balearic Islands (Valet 1968; Ribera Siguán and Gómez Garreta 1985; Gallardo et al. 1993) and the north-western coast of Spain (Pérez-Ruzafa and Honrubia 1984; Gallardo et al. 1985; Pérez-Ruzafa 1990; Gallardo et al. 1993, 2016; Pérez-Ruzafa et al. 2008).

S. Rossi, G. Calvia, E. Trainito

### ***Nitella opaca* (C.Agardh ex Bruzelius) C.Agardh (Characeae)**

+ **ABR:** Lago della Montagna Spaccata, Alfedena (L'Aquila) (WGS 84: 33T 417533 4619146), lake bottom between 0 and 7 m depth, 1060 m, 22 August 2023, leg. L. Rosati, G. Filibeck, det. L. Rosati, M.M. Azzella (UTV, HLUC); Lago di Scanno, Scanno (L'Aquila) (WGS 84: 33T 405937 4641877), lake bottom between 3 and 6 m depth, 922 m, 9 September 2023, leg. L. Rosati, G. Filibeck, det. L. Rosati, M.M. Azzella (UTV, HLUC); Lago di Campotosto, Parco Nazionale del Gran Sasso e Monti della Laga, Campotosto (L'Aquila) (WGS 84: 33T 367533 4711315), lake bottom between 5 and 14 m depth, 1300 m, 19 September 2023, leg. L. Rosati, L. Cancellieri, det. L. Rosati, M.M. Azzella (UTV, HLUC). – Species new to Abruzzo.

This species was recorded in Italy for Trentino-Alto Adige, Lombardia, Veneto, Lazio and Sardegna (Bazzichelli and Abdelahad 2009). In Abruzzo, it currently dominates the submerged vegetation of the Montagna Spaccata reservoir; it covers also large areas in the Campotosto reservoir, while it is less abundant in the natural lake of Scanno. *Nitella opaca* is similar to *N. flexilis* (L.) C.Agardh, from which it differs for being dioecious. In general, *N. opaca* colonizes high-conductivity waters, rich in calcium content, and occurs at varying depths (Kairesalo et al. 1992; Trajanovska et al. 2012; Azzella 2014; Auderset Joye and Boissezon 2018); it requires relatively cold water (optimal temperature 12–15 °C) (Mouronval et al. 2015).

L. Rosati, L. Cancellieri, G. Filibeck

### ***Nitella gracilis* (Smith) C.Agardh (Characeae)**

+ **ABR:** Lago di Barrea, Parco Nazionale d'Abruzzo Lazio e Molise, Civitella Alfedena (L'Aquila) (WGS 84: 33T 413176 4624275), lake bottom between 0 and 3 m depth, 975 m, 21 August 2023, leg. L. Rosati, G. Filibeck, det. L. Rosati, M.M. Azzella (UTV, HLUC); Lago di Campotosto, Parco Nazionale del Gran Sasso e Monti della Laga, Campotosto (L'Aquila) (WGS 84: 33T 366045 4712141), lake bottom between 5



and 10 m depth, 1300 m, 10 September 2023, leg. *L. Rosati*, *G. Filibeck*, det. *L. Rosati*, *M.M. Azzella* (UTV, HLUC); Lago della Montagna Spaccata, Alfedena (L'Aquila) (WGS 84: 33T 417518 4619153), lake bottom at 4 m depth, 1060 m, 22 August 2023, leg. *L. Rosati*, *G. Filibeck*, det. *L. Rosati*, *M.M. Azzella* (UTV, HLUC). – Species new to Abruzzo.

This species was recorded in Lombardia, Friuli-Venezia Giulia, Veneto and Lazio (Bazzichelli and Abdelahad 2009). We found it in very small quantities, within the mats of dominant Characeae such as *N. opaca* (C.Agardh ex Bruzelius) C.Agardh or *Chara vulgaris* L., in the submerged vegetation of three reservoir lakes. It is impossible to confuse it with any other species of the genus. *N. gracilis* is a rare and endangered species: it is extinct in Denmark and endangered in the Balkans, Sweden and Switzerland (Azzella 2014). Its optimum seems to point to low-calcium waters (Auderset Joye and Boissezon 2018), thus the finding in association with calciophilous *N. opaca* requires further ecological investigation.

L. Rosati, G. Filibeck, M.M. Azzella

### ***Nitellopsis obtusa* (Desv.) J.Groves (Characeae)**

+ **ABR**: Lago di Campotosto, Parco Nazionale del Gran Sasso e Monti della Laga, Campotosto (L'Aquila) (WGS 84: 33T 367428 4711205), lake bottom between 9 and 14 m depth, 1300 m, 19 September 2023, leg. *L. Rosati*, *L. Cancellieri*, det. *L. Rosati*, *M.M. Azzella* (UTV, HLUC). – Species new to Abruzzo.

This widespread species is recorded in Italy for Veneto, Emilia-Romagna, Toscana, Lazio, Puglia and Basilicata (Bazzichelli and Abdelahad 2009). *Nitellopsis obtusa* is the only extant member of the genus; it is a dioecious species, usually colonizing carbonate-rich waters, often reaching deeper waters than other Charophytes (Bolpagni et al. 2013; Azzella 2014). This species is of conservation concern in much of its native European range (Azzella 2014) but is classified as an invasive species in North America (Larkin et al. 2018). We found that *N. obtusa* is the dominant species in the deepest vegetation belt of the reservoir Lake of Campotosto; the lake bottom lies on a former mire within a sandstone-marl basin.

L. Rosati, L. Cancellieri, M.M. Azzella

### ***Nitellopsis obtusa* (Desv.) J.Groves (Characeae)**

+ **BAS**: Lago Pantano, Pignola (Potenza) (WGS 84: 33T 563204 4493157), lake bottom at 1.3 m depth, 764 m, 12 August 2022, leg. *L. Rosati*, *G. Potenza*, det. *L. Rosati* (HLUC). – Species confirmed for Basilicata.

The only record of this species for Basilicata dates to more than a century ago, in Monticchio lakes (Trotter 1908, sub *Tolypellopsis ulvoides*). A recent work found that it was extinct from these lakes (Azzella 2012). We have re-discovered it at a different location, Lago Pantano - where Characeae are very rare, only occurring interspersed within the *Ceratophyllum demersum* L.-dominated vegetation.

G. Potenza, L. Rosati



## Bryophytes

### *Drepanocladus turgescens* (T.Jensen) Broth. (Amblystegiaceae)

+ **TAA:** Sella Group, near the path Rif. Pordoi-Rif. Boè (Trento) (UTM WGS84: 32T 716173.5153708), water flow on dolomite, 2812 m, 3 September 2019, *F. Prosser* (ROV 03847); Brenta Group, below the NW face of Cima Grostè (Trento) (UTM WGS84: 32T 646605.5118202), on wet dolomite steps, 2585 m, 31 July 2020, *F. Prosser* (ROV 05509); Pale di S. Martino, on the plateau (Trento) (UTM WGS84: 32T 719507.5127871), wetland on dolomite, 2473 m, 12 August 2020, *F. Prosser* (ROV FP 05208). – Species confirmed for Trentino-Alto Adige.

*Drepanocladus turgescens* is a moss with a mainly subarctic-alpine distribution in Europe (Krajewski 2017), rare in the Mediterranean (Ros et al. 2013). In Italy it is reported only from some northern administrative regions, such as Piemonte, Friuli-Venezia Giulia, Veneto, and Trentino-Alto Adige, in the latter two with old records (Aleffi et al. 2020). In Trentino-Alto Adige, *D. turgescens* was previously signalled by Dalla Torre and Sarnthein (1904) for Passo di Resia, where it is not confirmed (FloraFaunaSüdtirol 2023).

F. Prosser

### *Fissidens fontanus* (Bach.Pyl.) Steud. (Fissidentaceae)

+ **TAA:** Sarca river, between Torbole and Arco (UTM WGS84: 32T 646077.5082938), 72 m, 8 June 2023, *D. Spitale* (ROV 7000). – Species new to Trentino-Alto Adige.

*Fissidens fontanus* differs from the other species of the genus by missing a central strand in the stem and in the sheathing laminae reaching only 1/4–1/3 of the total leaf length (Privitera and Puglisi 1994). In Italy, the species is signalled with old records for Piemonte, Lombardia and Veneto, while more recent data (after 1968) are available for Friuli-Venezia Giulia, Toscana, Sardegna, and Sicilia (Aleffi et al. 2020); it is also recorded for Liguria and Lazio without precise collection data or locality. In the new locality the species was found growing on stones at depth of 10–30 cm.

D. Spitale, M. Cantonati

### *Hookeria lucens* (Hedw.) Sm. (Hookeriaceae)

+ **TAA:** Val di Daone, along the Chiese stream just above Pracul (Trento) (UTM WGS84: 32T 619161.5092964), humid wooded place on granite, 980 m, 14 May 2023, *F. Prosser* (ROV BR06971). – Species new to Trentino-Alto Adige.

*Hookeria lucens* is a species of shaded, moist, humid sites, reported in Italy from some northern and central regions (Piemonte, Lombardia, Veneto, Friuli-Venezia Giulia, Toscana, and Lazio) and with old reports from Puglia (Aleffi et al. 2020). In the new locality of Trentino-Alto Adige, it was found a few meters from the eastern bank of the Chiese river in a limited settlement of a few square decimetres in an area scarcely accessible and partially explored.

F. Prosser



***Weissia angustifolia* (Baumgartner) D.A.Callaghan (Pottiaceae)**

+ **ITA (TOS)**: Villamarina Hospital, Piombino (Livorno) (UTM WGS84: 32T 623451.4755326), on sunny and exposed flowerbeds with dry bare soil, consisting of more or less cemented quartzose-carbonate sand, 103 m, 14 January 2021, *G. Pandeli* (SIENA); Talamone (Grosseto) (UTM WGS84: 32T 675060.4714755), Mediterranean garrigue dominated by *Salvia rosmarinus* Spenn. on calcareous substrate, 38 m, 26 January 2021, *G. Pandeli* (SIENA). – Species new to Italy (Toscana).

*Weissia angustifolia* was previously reported as a variety of *W. longifolia* Mitt., and only recently recognized at species level by Callaghan et al. (2019). According to these authors, it differs from other taxa of the genus by the tightly involute margins along the distal half of perichaetial leaves, short seta and the presence of an abscission zone at the junction of the operculum and urn, a combination that is unique amongst European species belonging to *Weissia* Hedw. subg. *Astomum* Hampe.

G. Pandeli, I. Bonini, A. Battaglini

**Fungi*****Alnicola macrospora* J.Favre (Hymenogastraceae)**

+ **CAL**: Botanical Garden, University of Calabria, Rende (Cosenza) (UTM WGS84: 33S 605982.4357356), on the ground at the edge of an artificial carr, under *Populus* and *Salix* prevailing growing woody plant genera, 200 m, 7 October 2022, *N.G. Passalacqua*, *A.B. De Giuseppe*, *G. Sicoli* (CLU F324). – Species new to Calabria.

A group of about 20 gregarious basidiomata referable to the genus *Alnicola* Kühner [= *Naucoria* (Fr.) P.Kummer] was detected on the ground in a marshy area surrounding an artificial pond colonised by young poplars and willow trees. Very recently, the macro- and micro-characteristics of our specimens were found referable to the description of *Alnicola macrospora* J.Favre given by Consiglio and Marchetti (2022). Two detections of this fungus are available for Italy, i.e., from Sardegna in 2008 (Consiglio and Marchetti 2022) and from Lombardia in 2010 (<https://www.funghiitaliani.it/topic/64336-naucoria-salicis-pd-orton-1960/>). Further basidiomata of this fungus were observed in the same site on the 19<sup>th</sup> of April 2023.

N.G. Passalacqua, A.B. De Giuseppe, G. Sicoli

***Arthonia epiphyscia* Nyl. (Arthoniaceae)**

+ **TAA**: Dolomiti, Monte Castellazzo N of Passo di Rolle (Trento) (UTM WGS84: 32T 715182.5131793), on slope exposed to the S, on boulders of marly limestone, on the thallus of *Physcia dubia* (Hoffm.) Lettau, c. 2100 m, 23 October 1976, *J. Hafellner* (no. 84354 GZU). – Species new to Trentino-Alto Adige.

The lichenicolous *A. epiphyscia* is easily recognized by its pure black, convex ascomata, often arranged in isolated small dense groups on the host thallus. The species is known



from all continents – for a sketch of the overall distribution see Brackel (2014) – and is also widely distributed in Italy (Brackel 2016; Nimis 2016; Nimis and Martellos 2023), but apparently rare compared to the commonness of its hosts, i.e., various ordinary *Physcia* species. In the north of the country, it was so far only known from Venezia-Giulia (Nimis and Martellos 2023). The collection reported here is the first in Italy above the treeline. Earlier records on *Phaeophyscia* refer to *A. phaeophysciae* Grube & Matzer (see there).

J. Hafellner

### ***Arthonia phaeophysciae* Grube & Matzer (Arthoniaceae)**

+ **TAA**: Val Venosta, ca. 1 km NE above of Schlanders, by the trail to Vezzan (Bolzano) (UTM WGS84: 32T 636831.5165507), on slope exposed to the S, on soil layer over siliceous outcrops, on the thallus of *Phaeophyscia cernohorskyi* (Nádv.) Essl., ca. 800 m, 5 September 1992, J. Hafellner (no. 30406 GZU). – Species new to Trentino-Alto Adige.

The lichenicolous *A. phaeophysciae* is distinguished from the otherwise similar *A. epiphyscia* Nyl. by its ascomata breaking through the upper cortex of the host. In early stages of development, the ascomata remain partly covered by remnants of the cortex and the epinecral layer, a diagnostic feature easily observed under the dissecting microscope. This species behaves as parasite on the thallus of various *Phaeophyscia* species, causing finally a bleaching of the infected areas. This species is widely distributed in Europe but rare in Asia and the Americas. For an outline of the overall distribution see Brackel (2014). In Italy it is widely distributed (Brackel 2016; Nimis 2016; Nimis and Martellos 2023) but so far only rarely recorded. For instance, it is possibly a repeatedly overlooked inhabitant on the ordinary *Phaeophyscia orbicularis* (Neck.) Moberg. In the north of the country, it was so far only known from Friuli-Venezia Giulia (Brackel 2013) and Emilia-Romagna (Nimis and Martellos 2023).

J. Hafellner

### ***Cortinarius vernus* H.Lindstr. & Melot (Cortinariaceae)**

+ **CAL**: Botanical Garden, University of Calabria, Rende (Cosenza) (UTM WGS84: 33S 605764.4357037), on the ground under the crown of *Quercus ilex* L. trees, 220 m, 26 April 2023, L. Bernardo, G. Sicoli, N.G. Passalacqua (CLU F328). – Species new to Calabria.

A group of dark cespitose basidiomata, lacking a peculiar smell and taste, immediately attributable to *Cortinarius* subg. *Telamonina* (Fr.) Loudon, was found in late April 2023 on the ground among the litter of young planted *Quercus ilex* L. trees. The fungus was identified as *Cortinarius vernus* since spores were strongly verrucose, but broadly ellipsoid ( $7.5\text{--}9.0 \times 4.5\text{--}5.5\ \mu\text{m}$  in size), thus longer than those belonging to the closely related species *C. erythrinus* (Fr.) Fr., which is still a spring species, but also mainly recorded in coniferous forests (Moser 1986; Brandrud 1992). So far, *C. vernus* has been reported in northern and central Italy, as a synonym of *C. erythrinus*, or as a putative variety of *C. castaneus* (Bull.) Fr. (Onofri et al. 2013).

L. Bernardo, G. Sicoli, N.G. Passalacqua



***Inocybe assimilata* Britzelm. (Inocybaceae)**

+ **CAL:** Botanical Garden, University of Calabria, Rende (Cosenza) (UTM WGS84: 33S 605877. 4357175), on the ground in the proximity of a *Quercus pubescens* Willd., 210 m, 24 May 2023, G. Sicoli, A.B. De Giuseppe, N.G. Passalacqua (CLU F329). – Species new to Calabria.

A group of solitary, but gregarious inocyboid basidiomata belonging to *I. assimilata* were observed on the ground just outside the crown of a *Quercus pubescens* Willd. subsp. *pubescens* at the edge of a path. In Italy *I. assimilata* has been reported so far in most northern regions, but also in Toscana and Campania (Onofri et al. 2013).

G. Sicoli, A.B. De Giuseppe, N.G. Passalacqua

***Inocybe bresadolae* Massee (Inocybaceae)**

+ **CAL:** Botanical Garden, University of Calabria, Rende (Cosenza) (UTM WGS84: 33S 605926. 4357228), on the ground at the margin of the crown of *Quercus* sp. pl. (*Q. pubescens* Willd. and *Q. ilex* L.), 210 m, 26 October 2022, G. Sicoli, A.B. De Giuseppe, N.G. Passalacqua (CLU F327). – Species new to Calabria.

A group of cespitose, inocyboid basidiomata were observed on the ground at the edge of a deciduous tree-species stand. In Italy *I. bresadolae* has been reported so far in almost all northern administrative regions, but also in Toscana and Sicilia (Onofri et al. 2013).

G. Sicoli, A.B. De Giuseppe, N.G. Passalacqua

***Leucoagaricus purpureolilacinus* Huijsman (Agaricaceae)**

+ **CAL:** Botanical Garden, University of Calabria, Rende (Cosenza) (UTM WGS84: 33S 605822.4357361), on the ground at the edge of a riparian wood among the litter of natural *Populus ×canescens* trees (prevailing species), and planted trees of *Taxodium distichum* (L.) Rich., 200 m, 12 October 2022, G. Sicoli, A.B. De Giuseppe, N.G. Passalacqua (CLU F326). – Species new to Calabria.

Three gregarious, slender and fragile, lepiotaceous basidiomata were found emerging among the living foliage of herbaceous plants (*Hedera helix* L. and *Galium verum* L. prevailing) and the litter of *Populus* and *Taxodium* as overhead trees. *L. purpureolilacinus* (= *L. purpureorimosus* Bon & Boiffard) (Courtecuisse and Duhem 1995), has been reported only in a few Italian regions, so far, such as Emilia-Romagna, Lombardia, and Sardegna (Onofri et al. 2013).

G. Sicoli, A.B. De Giuseppe, N.G. Passalacqua

***Neohygrocybe ovina* (Bull.) Herink (Hygrophoraceae)**

+ **CAL:** Botanical Garden, University of Calabria, Rende (Cosenza) (UTM WGS84: 33S 605822.4357361), on the ground in the grass, close to planted young broadleaved



trees (*Acer monspessulanum* L., *Crataegus monogyna* Jacq. and *Olea europaea* L.), 210 m, 26 May 2023, A.B. De Giuseppe, N.G. Passalacqua, G. Sicoli (CLU F330). – Species new to Calabria.

A couple of fasciculate basidiomata belonging to *N. ovina* were observed on the ground in the grass, in the middle between a Montpellier maple, a common hawthorn and an olive tree. In Italy *N. ovina* has been reported so far only in some northern and central administrative regions (Onofri et al. 2013).

A.B. De Giuseppe, N.G. Passalacqua, G. Sicoli

***Puccinia phragmitis* (Schumach.) Tul. (Pucciniaceae)**

+ **CAL:** Bosco di Mavigliano, Montalto Uffugo (Cosenza), (UTM WGS84: 33S 604678.4360969), on leaves of *Rumex crispus* L., 191 m, 18 May 2020, D. Puntillo (CLU 442) – Species new to Calabria.

In Calabria *P. phragmites* has been recorded on the leaves of *Rumex crispus* L. (I and II stage) and on leaves of *Arundo donax* L. (III, IV, V stage). The second stage produces bright and brilliant red spots on the leaves. In Italy it is known from Friuli-Venezia Giulia (Tomasini 2018), Piemonte, Lombardia, Veneto, Emilia-Romagna, Toscana, Puglia, Lazio, Campania, and Sicilia (Trotter 1910; Venturella 1991).

D. Puntillo

**Lichens**

***Bacidina adastrata* (Sparrius & Aptroot) M.Hauck & V.Wirth (Ramalinaceae)**

+ **LOM:** Bosco La Goccia, area of the former gasometers between Via M. Pacuvio and Via S. Siccoli, Milano (Milano), on trunks of *Robinia pseudoacacia* L. and *Populus nigra* L. in a broadleaved wood (UTM WGS84: 32T 511977.5039310 and 511804.5039340), 130 m, 11 March 2023, G. Gheza (BOLO); sports field of Tromello (Pavia), on trunks in a row of *Tilia* sp. (UTM WGS84: 32T 489945.5006842), 98 m, 21 March 2023, G. Gheza (Herb. Gheza). – Species new to Lombardia.

*Bacidina adastrata*, described recently from the Netherlands (Sparrius and Aptroot 2003), had been reported in Italy only twice from Emilia-Romagna so far (Nascimbene et al. 2021). The first site reported here is a broadleaved woodland dominated by *Celtis australis* L., *Populus nigra* L. and *Robinia pseudoacacia* L. growing, in the last 25 years, on a former industrial site near the city center of Milano (Galasso et al. 2022). The second one is located on the outskirts of an agricultural village, confirming the attitude of the species to develop in anthropized habitats under eutrophicated conditions (Sparrius and Aptroot 2003).

G. Gheza, G. Rapaccini, G. Galasso



***Chaenotheca gracilenta* (Ach.) Mattsson & Middelb. (Coniocybaceae)**

+ **UMB**: Grotte di Abeto, Fiano d'Abeto, Preci (Perugia) (UTM WGS84 33T 342733.4743163), on *Juniperus* bark and roots at the entrance to the prehistoric caves n. 1 and n. 2, ca. 980 m, 30 April 2023, leg. R. Galli, det. S. Ravera (PAL). – Species new to Umbria.

*Chaenotheca gracilenta* is a very to extremely rare pinhead lichen (Nimis and Martellos 2023) in Italy, usually found in niches protected from rain, such as the prehistoric caves where it was collected, on rotting wood and decaying bark of trees and stumps mostly in old-growth forests, in boreal and continental climates. It is listed in the Red List of Italian epiphytic lichens as “vulnerable” (Nascimbene et al. 2013).

R. Galli, S. Ravera

***Flavoplaca communis* (Vondrák, Říha, Arup & Søchting) Arup, Søchting & Frödén (Teloschistaceae)**

+ **LIG**: Framura (La Spezia) (UTM 32T 544971.4893366), on S-facing coastal rocks, 0 m, 29 April 2012, leg J. Malíček, det. J. Vondrák (PRA). – Species new to Liguria.

*Flavoplaca communis* is a maritime crustose species of siliceous seashore cliffs, closely related to *F. marina* (Wedd.) Arup, Frödén & Søchting. In Italy, it was reported so far only from Toscana and Sardegna (Vondrák et al 2009; Nimis and Martellos 2023), but it is likely more widespread in the Tyrrhenian side of the Peninsula.

S. Ravera, J. Malíček

***Gyalecta ophiospora* (Lettau) Baloch & Lücking (Gyalectaceae)**

+ **ITA (EMR)**: trail between Rifugio Firenze and Monte Cimone, Sestola (Modena), on trunk of *Fagus sylvatica* L. in a beech forest (UTM WGS84: 32T 637500.4896589), 1577 m, 21 October 2022, leg. F. Bottegoni, det. J. Nascimbene, G. Gheza (BOLO). – Species new to Italy (Emilia-Romagna).

*Gyalecta ophiospora* is characterised by the hyaline, acicular, multiseptate spores that are strongly curved and arranged spirally within the asci (Nimis and Martellos 2023). It is a widespread species in montane broadleaved forests of temperate Europe and Asia (Nimis and Martellos 2023). It was already reported from the Alps outside Italy (Nimis et al. 2018).

J. Nascimbene, G. Gheza

***Heterodermia speciosa* (Wulfen) Trevis. (Physciaceae)**

+ **LAZ**: Val Leonina, Monte Terminillo (Rieti) (UTM WGS84 33T: 335775.4705926), on *Fagus sylvatica* L., 1520 m, 17 July 1999, leg. G. Massari, S. Ravera, det. S. Ravera (PAL). – Species confirmed for Lazio.



The only previous record of *H. speciosa* for this region were from Villa Pamphili in Rome (Tamburlini 1884; Jatta 1889) but, according to Nimis (1993), it might refer to *Heterodermia obscurata* (Nyl.) Trevis. This sample was collected on bark and over bryophytes in a moist beech stand (Natura 2000 Habitat 9210 “Apeninne beech forests with *Taxus* and *Ilex*”), which is coherent with it having its optimum in humid, mostly montane woodlands (Nimis and Martellos 2023). *Heterodermia speciosa* is listed in the Red List of Italian epiphytic lichens as “near-threatened” (Nascimbene et al. 2013).

S. Ravera

***Rinodina immersa* (Körb.) J.Steiner (Physciaceae)**

+ **LOM:** Monte Misma (Bergamo) (UTM WGS84: 32T 563635 5064808), on calcareous outcrop, 1000 m, 9 May 2023, leg. D. Isocrono, S. Ongaro, A.M. Gibellini, det. D. Isocrono, S. Ongaro (ORO). – Species confirmed for Lombardia.

*Rinodina immersa* is a calcicolous endolithic lichen characterized by apothecia immersed in deep depressions in rocks. Although the spores are *bischoffii*-type, the immersed apothecia and lack of oil droplets in the hymenium clearly separate this species from *R. bischoffii* (Hepp) A.Massal. The only previous record from Lombardia date back to 1860 and refers to a single collection in Valtellina (Anzi 1860, sub *Rinodina bischoffii* Hepp. Massal var. *immersa* Korb.).

D. Isocrono, S. Ongaro

***Scytinium fragile* (Taylor) Otálora, P.M.Jørg. & Wedin (Collemataceae)**

+ **TOS:** La Castellaccia, near Convento del Petreto, Scansano (Grosseto) (UTM WGS84: 32T 691852.4729807), on calcareous outcrops partially shaded in a mixed oak forest with *Lobaria pulmonaria* (L.) Hoffm, on overhanging rock, 511 m, 24 April 2023, leg. A. Guttová, L. Paoli, det. A. Guttová, L. Paoli, Z. Fačkovcová (SAV). – Species new to Toscana.

*Scytinium fragile* is a small-lobate (to subcrustose) lichen, with cyanobacterial photobiont, dark green-brown to brown-black thallus of small, convex and sparsely branched lobes forming rosettes (diameter 2–3 cm). Apothecia are rare (Degelius 1954), but present in collected specimens. It seems to prefer steeply inclined rock surfaces and infiltration tracks in calcareous rocks, especially in areas with a humid-warm climate. So far reported from Liguria, Piemonte, Puglia and Sicilia (Nimis 1993; Nimis and Martellos 2023), it has been probably overlooked and perhaps it is more widespread in Tyrrhenian Italy (Nimis and Martellos 2023).

A. Guttová, L. Paoli, Z. Fačkovcová

***Scytinium turgidum* (Ach.) Otálora, P.M.Jørg. & Wedin (Collemataceae)**

+ **TOS:** La Castellaccia, near Convento del Petreto, Scansano (Grosseto) (UTM WGS84: 32T 691852.4729807), on calcareous outcrops partially shaded in a mixed



oak forest with *Lobaria pulmonaria* (L.) Hoffm, on overhanging rock, 511 m, 24 April 2023, leg. A. Guttová, L. Paoli, det. A. Guttová, L. Paoli, Z. Fačkovcová (SAV). – Species confirmed for Toscana.

*Scytinium turgidum* is a small lobate lichen, with cyanobacterial photobiont and blackish, brownish, subcylindrical lobes. The surface is wrinkled to plicate and granularly isidiate (Cannon et al. 2020). It prefers calcareous rocks, on surfaces with some water infiltration after rain, such as in the investigated locality, which also hosts a small population of the rare *Solenopsora marina* (Ravera et al. 2018). The publication of a previous record of *S. turgidum* from Toscana dates back to 1871 (Baglietto 1871; Nimis 1993).

A. Guttová, L. Paoli, Z. Fačkovcová

### ***Squamarina nivalis* Frey & Poelt (Stereocaulaceae)**

+ **PIE**: Alpi Cozie, Ridge NW above Crissolo N above Pian di Melzè (Cuneo) (UTM WGS84: 32T 350805.4951796), S-exposed slopes of calcareous schist, 1880 m, July 2001, leg. P.L. Nimis, M. Tretiach, det. P.L. Nimis (TSB 35320). – Species new to Piemonte.

A species growing on wind-exposed outcrops of calcareous schists near or above treeline, sometimes on calciferous soil, reaching the nival belt in the Alps, where it is probably more widespread but certainly not common. The species is an altitudinal vicariant of the very similar *S. lentigera* (Weber) Poelt which has a mainly Mediterranean distribution in Europe.

J. Nascimbene, P.L. Nimis

### ***Squamarina subcetrarioides* (Zahlbr.) Y.Y.Zhang (Squamarinaceae)**

+ **ITA (FVG)**: Carnic Alps, M. Coglians (Udine) (UTM WGS84: 33T 336964.5163706), on calcareous rocks, 2200 m, 1983, leg. M. Palma, det. P.L. Nimis (TSB 3798). – Species new to Italy (Friuli-Venezia Giulia).

+ **VEN** Dolomiti Bellunesi National Park, Cimonega, Col dei Bechi (Belluno) (UTM WGS84: 32T 727065.5115734), on calcareous rocks, 1975, 12 August 2020, J. Nascimbene (BOLO - JN6855). – Species new to Veneto.

+ **TAA** Paneveggio-Pale di S. Martino, Pale di San Martino Natural Park, Passo Canali (Trento) (UTM WGS84: 32T 723657.5126498), on calcareous rocks, 2480 m, 11 August 2021, J. Nascimbene (BOLO – JN7697). – Species new to Trentino-Alto Adige.

+ **PIE** Alpi Cozie Ridge NW above Crissolo N above Pian di Melzè (Cuneo) (UTM WGS84: 32T 350804.4951795), S-exposed slopes of calcareous schist, 1880 m, 2001, P.L. Nimis, M. Tretiach (TSB 35323). – Species new to Piemonte.

+ **MAR** Sibillini Mnts., M. Bove near Visso (Macerata) (UTM WGS84: 33T 351814.4753199), on calcareous rocks, 1850 m, 1996, P.L. Nimis, M. Tretiach (TSB 23783). – Species new to Marche.

+ **ABR** Maiella National Park, near Martellese (Chieti) (UTM WGS84: 33T 430023.4662845), on calcareous rocks, 2065 m, 25 July 2017, J. Nascimbene (BOLO – JN5242). – Species new to Abruzzo.



*Squamarina gypsacea* (Sm.) Poelt, the type species of the genus, was considered as a polymorphic calcicolous lichen with two distributional optima, the typical variety in the Mediterranean belt, *S. gypsacea* var. *subcetrarioides* (Zahlbr.) Pišút, in the alpine belt of the Alps and the Carpathians. The two varieties were not distinguished by most Italian authors (see Nimis 1993; 2016, Nimis et al. 2018). The study by Zhang et al. (2023) showed that *S. gypsacea* var. *subcetrarioides* differs from the typical variety not only in terms of morphology and altitudinal distribution, but also in terms of molecular data and should, therefore, be treated as a distinct species.

J. Nascimbene, P.L. Nimis

## Acknowledgements

S. Ravera acknowledges the support of NBFC to University of Palermo, funded by the Italian Ministry of University and Research, PNRR, Missione 4 Componente 2, “Dalla ricerca all’impresa”, Investimento 1.4, Project CN00000033. G. Filibeck and L. Cancellieri acknowledge funding from NextGeneration EU within the framework of National Biodiversity Future Center (Spoke 4, Activity 4). G. Filibeck, L. Cancellieri and L. Rosati are grateful to Parco Nazionale Gran Sasso e Monti della Laga and to Parco Nazionale d’Abruzzo Lazio e Molise for authorizing field sampling.

## References

- Aleffi M, Tacchi R, Poponessi S (2020) New checklist of the bryophytes of Italy. *Cryptogamie, Bryologie* 41: 147–195. <https://doi.org/10.5252/cryptogamie-bryologie2020v41a13>
- Anzi M (1860) *Catalogus lichenum quos in Provincia Sondriensi et circa Novum-Comum collegit et in ordinem systematicum digessit presbyter Martinus Anzi*. Tipografia C. Franchi, Como, 126 pp.
- Auderset Joye D, Boissezon A (2018) New insights into the ecology and phenology of two Characeae: *N. opaca* (Bruzellius) C. Agardh and *N. gracilis* (Sm.) C. Agardh. *Botany Letters* 165: 91–102. <https://doi.org/10.1080/23818107.2017.1365259>
- Azzella MM (2012) *Flora, vegetazione e indicatori macrofitici dei laghi vulcanici d’Italia*. PhD Thesis, Sapienza University, Roma.
- Azzella MM (2014) Italian Volcanic lakes: a diversity hotspot and refuge for European charophytes. *Journal of Limnology* 73: 502–510. <https://doi.org/10.4081/jlimnol.2014.950>
- Baglietto F (1871) *Prospetto Lichenologico della Toscana*. *Nuovo Giornale Botanico Italiano* 3: 211–298.
- Bazzichelli G, Abdelahad N (2009) *Alghe d’acqua dolce d’Italia*. *Flora analitica delle Caroficee*. Università degli Studi di Roma La Sapienza – Ministero dell’Ambiente e della Tutela del Territorio e del Mare, Roma. 73 pp.
- Bolpagni R, Bettoni E, Bonomi F, Bresciani M, Caraffini K, Costarossa S, Giacomazzi F, Monauni C, Montanari P, Mosconi C, Oggioni A, Pellegrini G, Zampieri C (2013) Charophytes



- of the lake Garda (Northern Italy): a preliminary assessment of diversity and distribution. *Journal of Limnology* 72: 388–393. <https://doi.org/10.4081/jlimnol.2013.e31>
- Brackel W von (2013) Miscellaneous records of lichenicolous fungi from the Italian Alps. *Herzogia* 26: 141–157. <https://doi.org/10.13158/heia.26.1.2013.141>
- Brackel W von (2014) Kommentierter Katalog der flechtenbewohnenden Pilze Bayerns. *Bibliotheca Lichenologica* 109: 1–476.
- Brackel W von (2016) Preliminary checklist of the lichenicolous fungi of Italy. *Notiziario della Società Lichenologica Italiana* 29: 95–145.
- Brandrud TE (1992) *Telamonia* (Fr.) Loudon. In: Hansen L and Knudsen H (Eds) *Nordic Macromycetes*, Vol. 2. Nordsvamp, Copenhagen, Denmark.
- Callaghan DA, Bell NE, Forrest LL (2019) Taxonomic notes on *Weissia* subgenus *Astomum*, including *Weissia wilsonii* D.A. Callaghan, a new species from Europe. *Journal of Bryology* 41: 135–148. <https://doi.org/10.1080/03736687.2018.1551590>
- Cannon P, Otálora MAG, Košuthová A, Wedin M, Aptroot A, Coppins B, Simkin J (2020) Peltigerales: Collemataceae, including the genera *Blennothallia*, *Callome*, *Collema*, *Enchylium*, *Epiphloea*, *Lathagrium*, *Leptogium*, *Pseudoleptogium*, *Rostania* and *Scytinium*. *Revisions of British and Irish Lichens* 2: 1–38.
- Consiglio G, Marchetti M (2022) Contributo alla conoscenza del Genere *Alnicola*. *Rivista di Micologia* 65: 5–95.
- Dalla Torre KW, Sarnthein L (1904) Flora der gefürsteten Grafschaft Tirol, des Landes Vorarlberg und des fürstenthumes Liechtenstein. V. Die Moose (Bryophyta) von Tirol, Vorarlberg und Liechtenstein. Wagner, Innsbruck. 671 pp.
- Degelius G (1954) The lichen genus *Collema* in Europe. Morphology, taxonomy, ecology. *Symbolae Botanicae Upsalienses* 13: 1–499.
- FloraFaunaSüdtirol (2023) Das Portal für Tier- und Pflanzenarten in Südtirol. Naturmuseum Südtirol, Bozen. <https://www.florafaina.it> [accessed 17 August 2023]
- Galasso G, Banfi E, Gentili R (2022) Dalla Goccia a Piazza d'Armi: piante spontanee e qualità della vita nella metropoli milanese. *Notiziario della Società Botanica Italiana* 6: 107–142.
- Gallardo T, Gómez Garreta A, Ribera MA, Alvarez M, Conde F (1985) A preliminary checklist of Iberian benthic marine algae. *Real Jardín Botánico*. Madrid, 83 pp.
- Gallardo T, Gómez Garreta A, Ribera MA, Cormaci M, Furnari G, Giaccone G, Boudouresque C-F (1993) Check-list of Mediterranean Seaweeds, II. Chlorophyceae Wille s.l. *Botanica Marina* 36: 399–421. <https://doi.org/10.1515/botm.1993.36.5.399>
- Gallardo T, Bárbara I, Afonso-Carrillo J, Bermejo R, Altamirano M, Gómez Garreta A, Barceló Martí MC, Rull Lluch J, Ballesteros E, De la Rosa J (2016) Nueva lista crítica de las algas bentónicas marinas de España. A new checklist of benthic marine algae of Spain. *Algas. Boletín Informativo de la Sociedad Española de Ficología* 51: 7–52.
- Jatta A (1889 [1890]) *Monographia Lichenum Italiae Meridionalis*. Tip. Vecchi, Trani, 261 pp.
- Kairesalo T, St. Jónsson G, Gunnarsson K, Lindegaard C, Jónasson PM (1992) Metabolism and community dynamics within *Nitella opaca* (Charophyceae) beds in Thingvallavatn. *Oikos* 64: 241–256. <https://doi.org/10.2307/3545054>
- Krajewski L (2017) *Drepanocladus turgescens* (Bryophyta, Amblystegiaceae) rediscovered in Poland. *Cryptogamie, Bryologie* 38: 265–273. <https://doi.org/10.7872/cryb/v38.iss3.2017.265>



- Larkin DJ, Monfils AK, Boissezon A, Sleith RS, Skawinski PM, Welling CH, Cahill BC, Karol KG (2018) Biology, ecology, and management of starry stonewort (*Nitellopsis obtusa*; Characeae): A Red-listed Eurasian green alga invasive in North America. *Aquatic Botany* 148: 15–24. <https://doi.org/10.1016/j.aquabot.2018.04.003>
- Moser M (1986) Guida alla determinazione dei funghi, Vol. 1 (Polyporales, Boletales, Agaricales, Russulales). Arti Grafiche Saturnia s.a.s., Trento.
- Mouronval JB, Baudouin S, Borel N, Soulié-Märsche I, Kleszczewski M, Grillas P (2015) Guide des Characées de France méditerranéenne. Office National de la Chasse et Faune Sauvage, Paris.
- Nascimbene J, Gheza G, Hafellner J, Mayrhofer H, Muggia L, Obermayer W, Thor G, Nimis PL (2021) Refining the picture: new records to the lichen biota of Italy. *MycoKeys* 82: 97–137. <https://doi.org/10.3897/mycokeys.82.69027>
- Nascimbene J, Nimis PL, Ravera S (2013) Evaluating the conservation status of epiphytic lichens of Italy: a red list. *Plant Biosystems* 147: 898–904. <https://doi.org/10.1080/11263504.2012.748101>
- Nimis PL (1993) The lichens of Italy: an annotated catalogue. Monografie XII. Museo Regionale di Scienze Naturali di Torino, Torino, 897 pp.
- Nimis PL (2016) The lichens of Italy – A second annotated catalogue. EUT Edizioni Università di Trieste, Trieste, 740 pp.
- Nimis PL, Martellos S (2023) ITALIC - The Information System on Italian Lichens. Version 7.0. University of Trieste, Department of Biology. [www.italic.units.it](http://www.italic.units.it) [accessed 13.8.2023]
- Nimis PL, Hafellner J, Roux C, Clerc P, Mayrhofer H, Martellos S, Bilovitz PO (2018) The lichens of the Alps – an annotated checklist. *MycoKeys* 31: 1–634. <https://doi.org/10.3897/mycokeys.31.23568>
- Onofri S, Bernicchia A, Filipello Marchisio V, Padovan F, Perini C, Ripa C, Savino E, Venturella G, Vizzini A, Zotti M, Zucconi L (2013) Checklist of the macrobasidiomycetes of Italy. <http://dryades.units.it/macrobasidiomiceti/index.php> [accessed 2.10.2023]
- Pérez-Ruzafa IM (1990) Fenología de las algas del Mar Menor (Murcia, SE de España). *Botanica Complutensis* 16: 21–36.
- Pérez-Ruzafa I, Honrubia M (1984) Aportación al conocimiento de la flora algal bentónica de la costa murciana. III. *Anales de Biología. Secretariado de Publicaciones. Universidad de Murcia* 2 (Sección Especial, 2): 135–146.
- Pérez-Ruzafa A, Hegazi MMI, Pérez-Ruzafa IM, Marcos C (2008) Differences in spatial and seasonal patterns of macrophyte assemblages between a coastal lagoon and the open sea. *Marine Environmental Research* 65: 291–314. <https://doi.org/10.1016/j.marenvres.2007.11.008>
- Privitera M, Puglisi M (1994) *Octodiceras fontanum* (Musci): a new record from Sicily. *Flora Mediterranea* 4: 171–174.
- Ravera S, Cogoni A, Vizzini A, Bonini I, Cheli F, Fačkovcová Z, Gheza G, Guttová A, Mair P, Mayrhofer H, Miserere L, Pandeli G, Paoli L, Prosser F, Puntillo D, Puntillo M, Selvaggi A, Spitale D, Tratter W (2018) Notulae to the Italian flora of algae, bryophytes, fungi and lichens: 6. *Italian Botanist* 6: 97–109. <https://doi.org/10.3897/italianbotanist.6.30873>
- Ribera Siguán MA, Gómez Garreta A (1985) Catálogo de la flora bentónica marina de las Islas Baleares: II (Phaeophyceae, Chlorophyceae). *Collectanea Botanica* 16: 25–41.



- Rodríguez-Prieto C, Ballesteros A, Boisset F, Alfonso-Carrillo J (2010) Guía de las macroalgas y fanerógamas del Mediterráneo occidental. Ediciones Omega, Barcelona.
- Ros RM, Mazimpaka V, Abou-Salama U, Aleffi M, Blockeel T L, Brugués M, Cros RM, Dia MG, Dirkse GM, Draper I, El-Saadawi W, Erdag A, Ganeva A, Gabriel R, Gonzales-Mancebo JM, Granger C, Herrnstadt A, Hugonnot V, Khalil K, Kürschner H, Losada-Lima A, Luís L, Mifsus S, Privitera M, Puglisi M, Sabovlijević, Sèrgio C, Shabbara HM, Sim-Sim M, Sotiaux A, Tacchi R, Vanderpoorten A, Wernner O (2013) Mosses of the Mediterranean, an annotated checklist. *Cryptogamie, Bryologie* 34: 99–283. <https://doi.org/10.7872/cryb.v34.iss2.2013.99>
- Sparrus LB, Aptroot A (2003) *Bacidia adastrae*, a new sorediate lichen species from Western Europe. *The Lichenologist* 35 (4): 275–278.
- Tamburlini F (1884) Prima contribuzione alla lichenografia romana. *Annuario del Regio Istituto Botanico di Roma* 1: 122–153.
- Tomasi E (2018) I Fito-Zooecidi della Riserva Naturale Orientata del bacino del Prescudin (Friuli-Venezia Giulia, Italia NE). *Atti del Museo Civico di Storia Naturale di Trieste* 59: 168, 195.
- Trajanovska S, Blaženčić J, Trajanovski S, Budzakoska-Gjoreska B (2012) Distribution, morphological variability, ecology and the present state of *Nitella* from Lake Ohrid and its surroundings. *Archives of Biological Science* 64: 549–556. <https://doi.org/10.2298/ABS1202549T>
- Trotter A (1908) Laghi di Monticchio - Introduzione, considerazioni generali, sguardo botanico, cenni sulla morfologia fisica e sulla biologia. *Annali di Botanica (Roma)* 11: 1–30.
- Trotter A (1910) *Flora Italica cryptogama. Pars I: Fungi. Fasc. 7.* Tipografia Cappelli, Rocca San Casciano: 319.
- Valet G (1968) Contribution à l'étude des Dasycladales 1. Morphogenèse. *Nova Hedwigia* 16: 21–82.
- Venturella G (1991) A check-list of Sicilian fungi. *Bocconea* 2: 102.
- Vondrák J, Riha P, Arup U, Søchting U (2009) The taxonomy of the *Caloplaca citrina* group (Teloschistaceae) in the Black Sea region; with contributions to the cryptic species concept in lichenology. *Lichenologist* 41: 571–604. <https://doi.org/10.1017/S0024282909008317>
- Zhang Y, Wang L, Wang X, Printzen C, Timdal E, Wang L (2023) *Squamarina subcetrarioides* comb. & stat. nov. (Stereocaulaceae), a separate species from the type species of *Squamarina*. *Lichenologist* 55:133–137. <https://doi.org/10.1017/S0024282923000166>